

FIG. 1

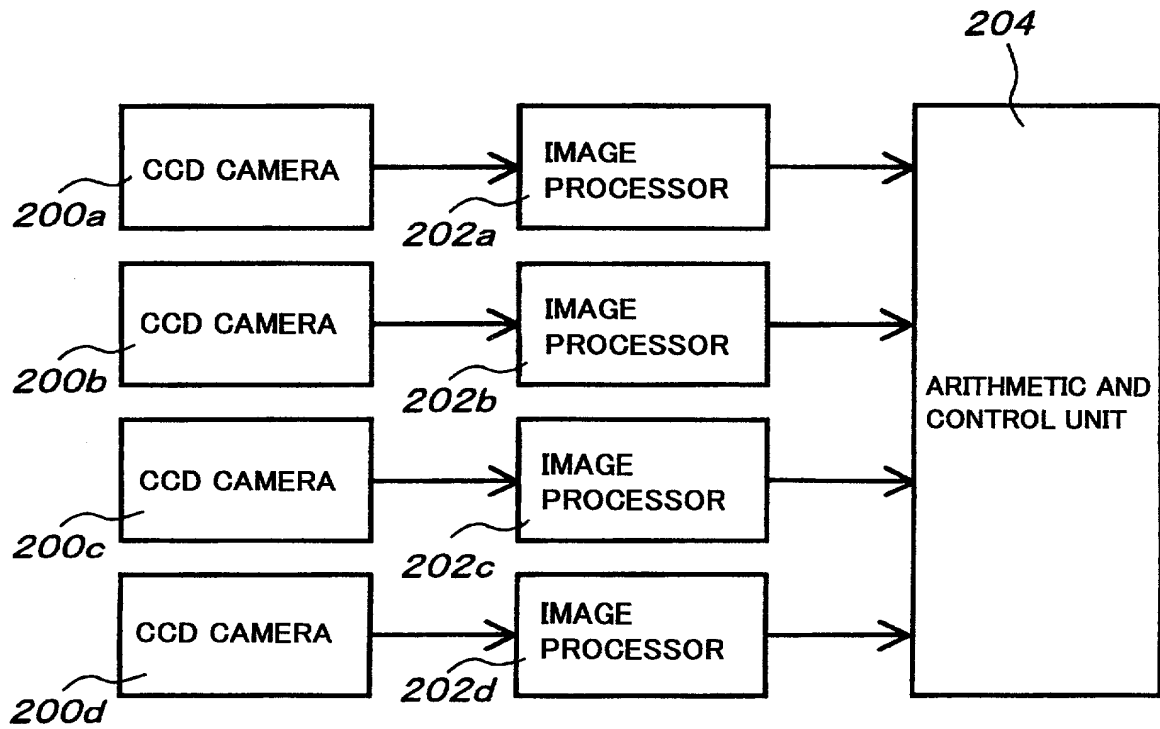


FIG. 3

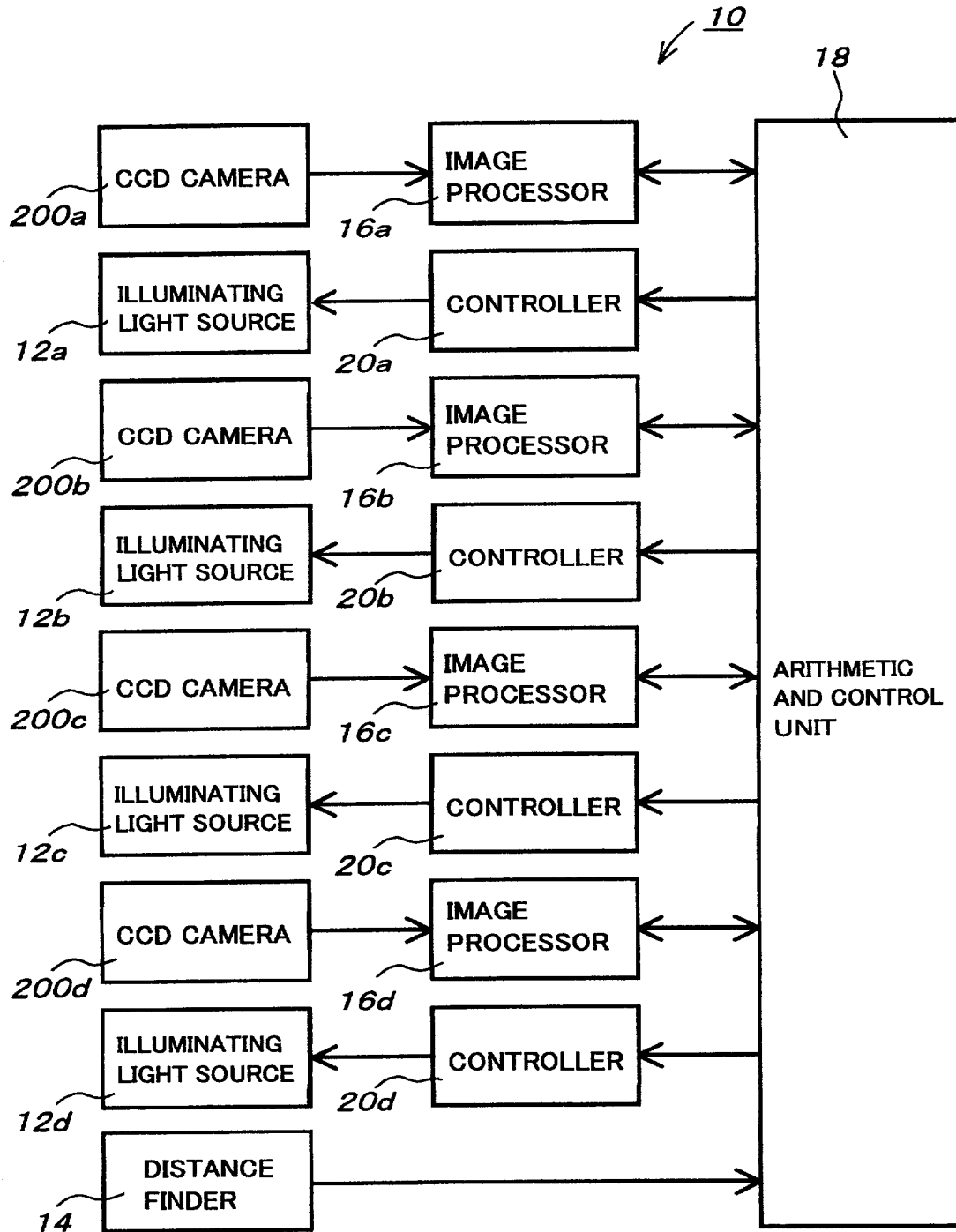


FIG. 4

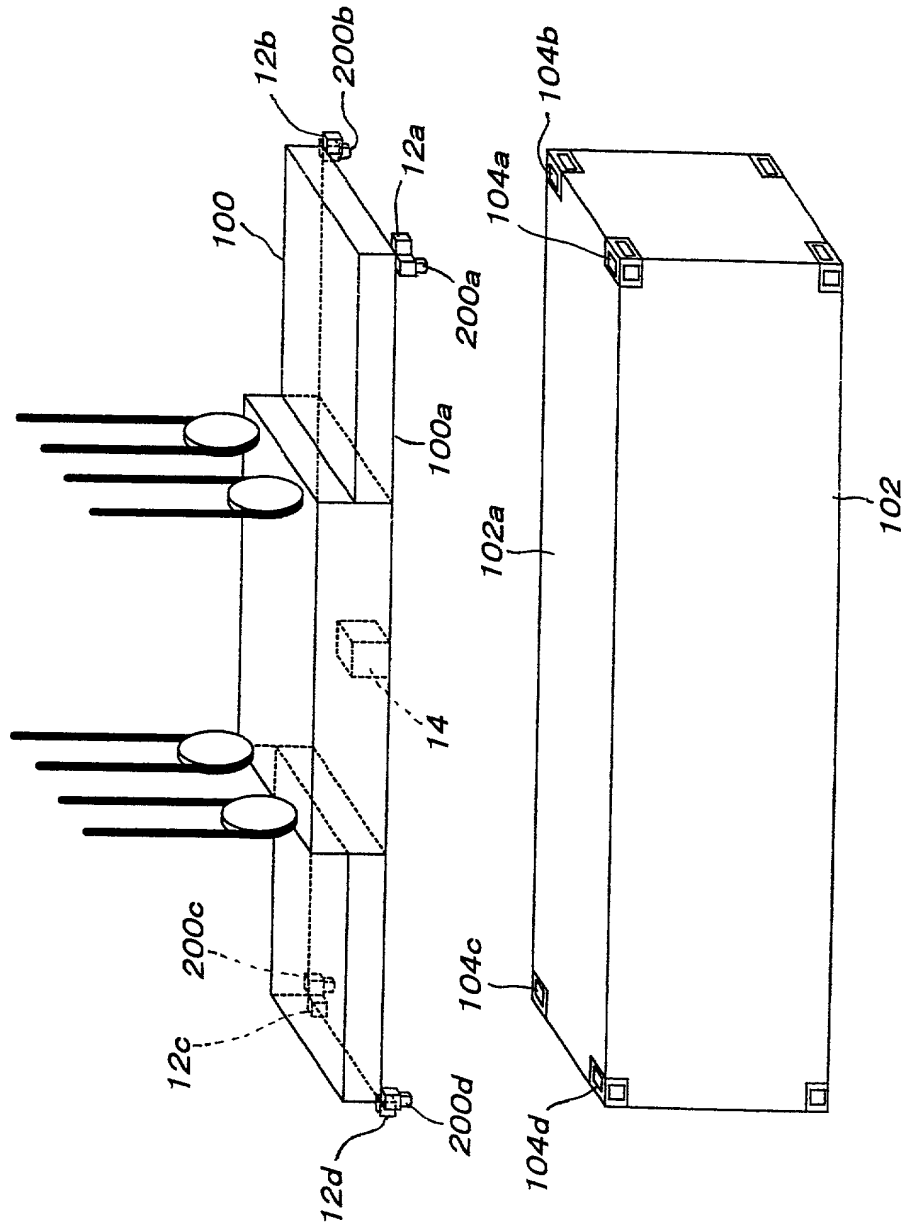


FIG. 5

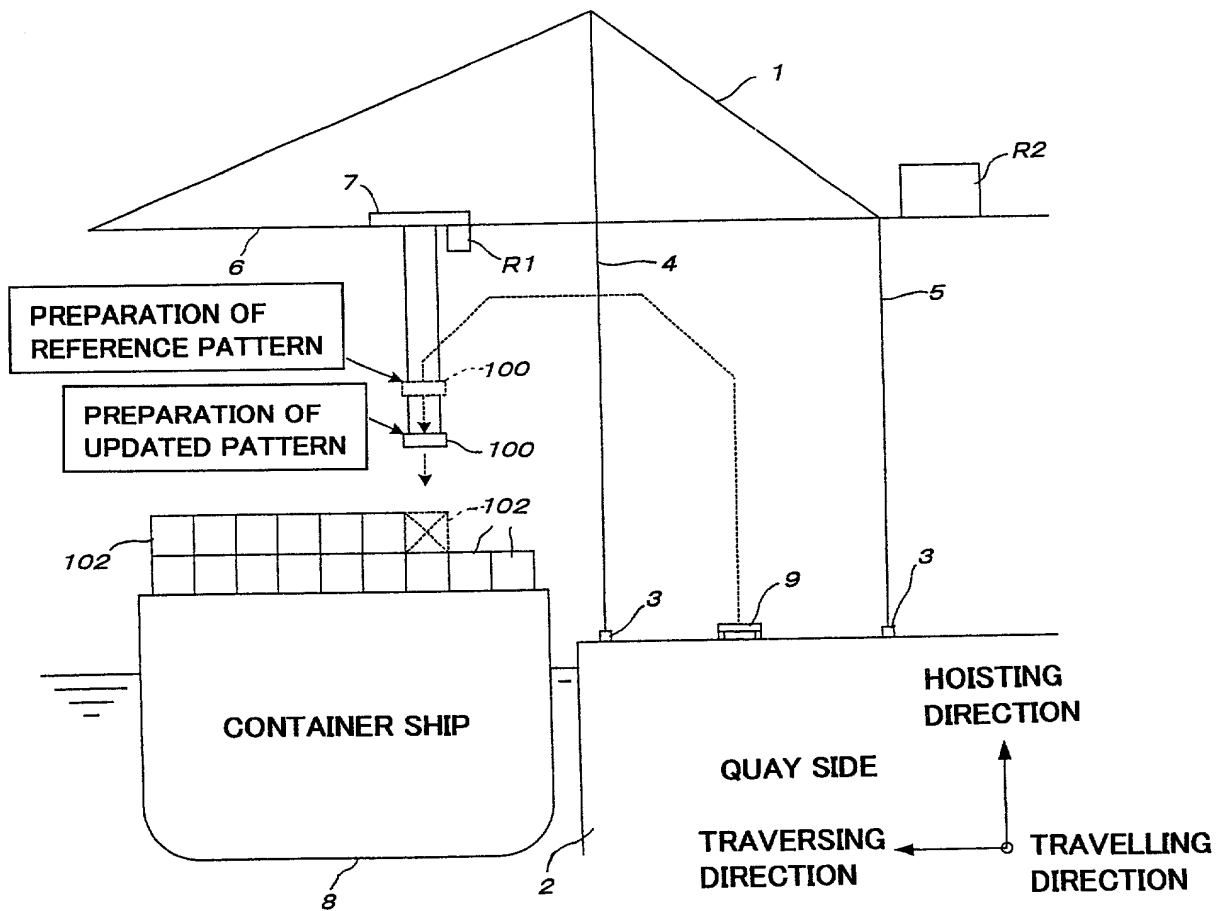


FIG. 6

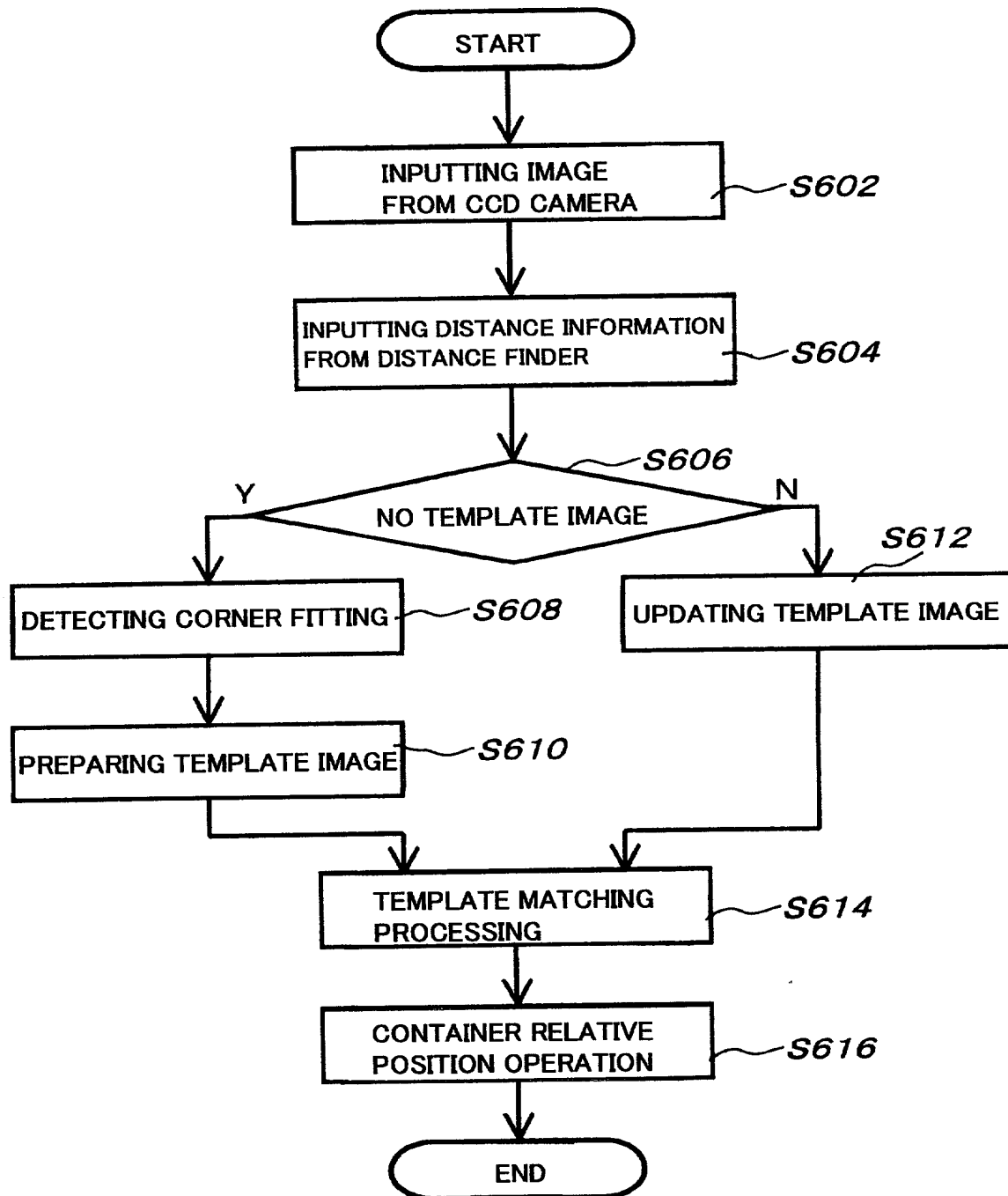
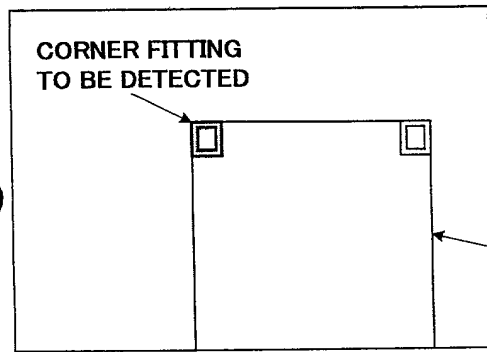
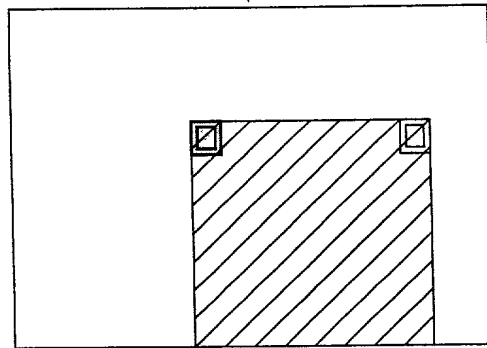


FIG. 7(a)



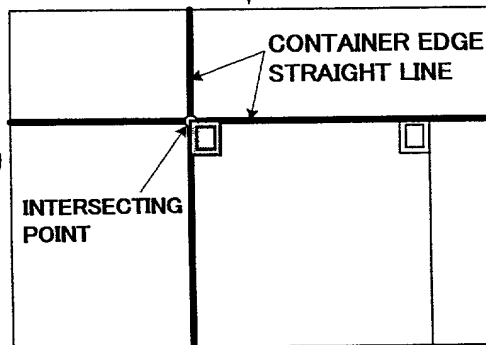
(a) ORIGINAL IMAGE

FIG. 7(b)



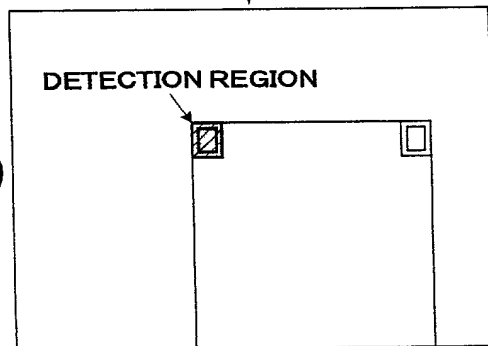
(b) DETECTION RESULT
ON CONTAINER
UPPER SURFACE

FIG. 7(c)



(c) RESULTS OF LINEAR
APPROXIMATION OF
CONTAINER EDGE AND
INTERSECTING
POINT DETECTION

FIG. 7(d)

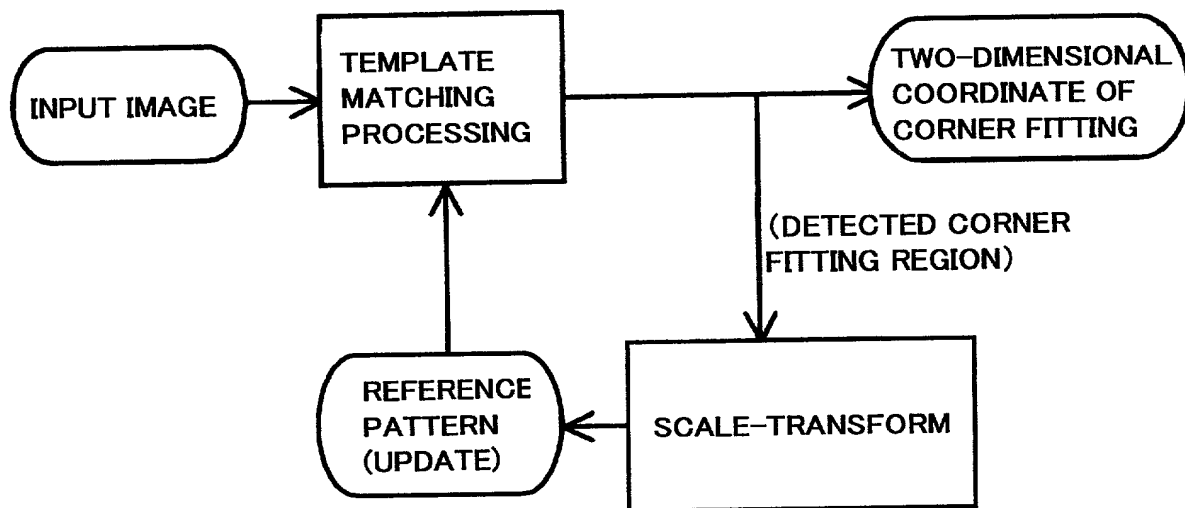


(d) RESULT OF CONTAINER
FITTING DETECTION

STORAGE AS TEMPLATE IMAGE
(REFERENCE PATTERN)



FIG. 8



0001738 073801

FIG. 9

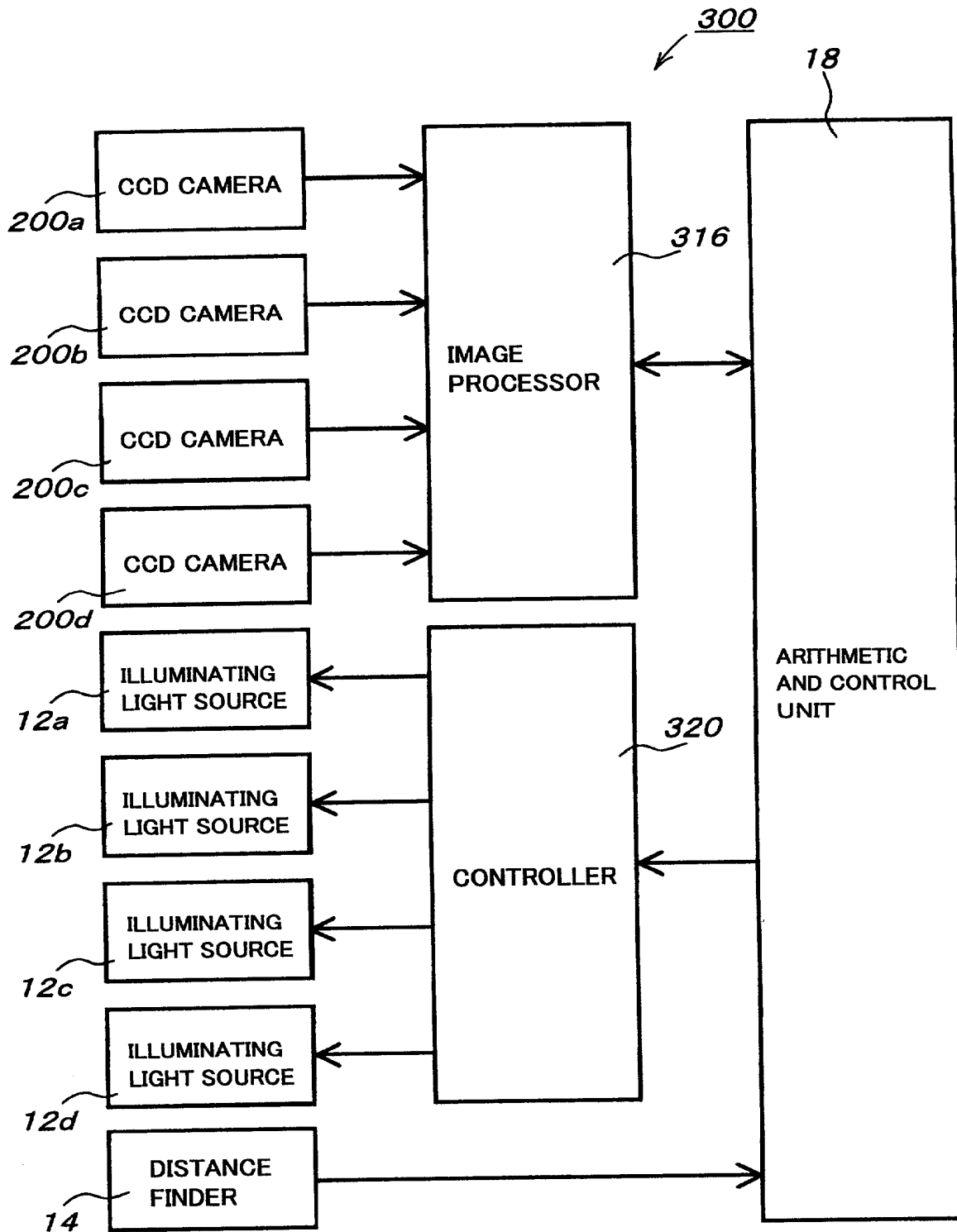


FIG. 10

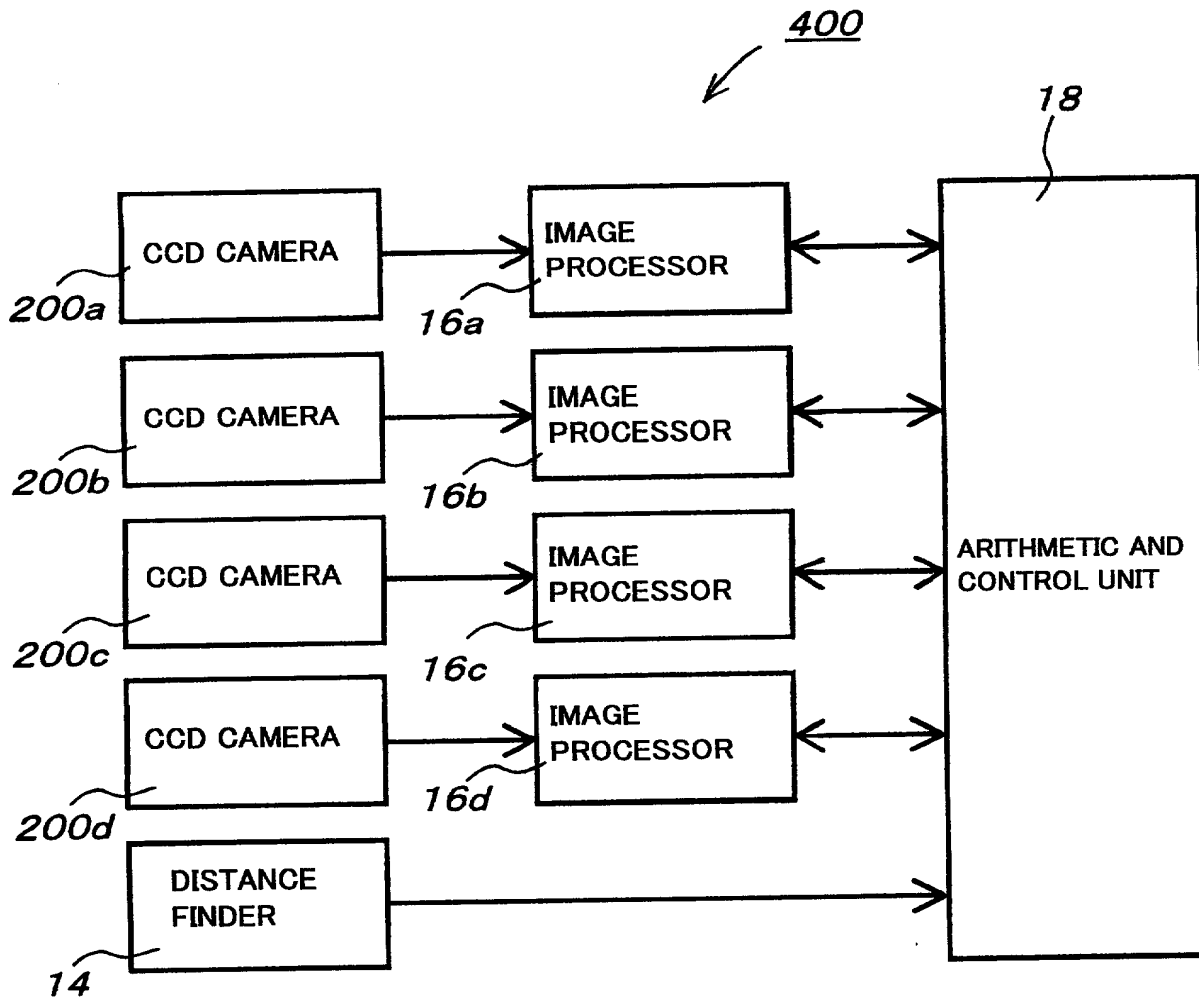


FIG. 11

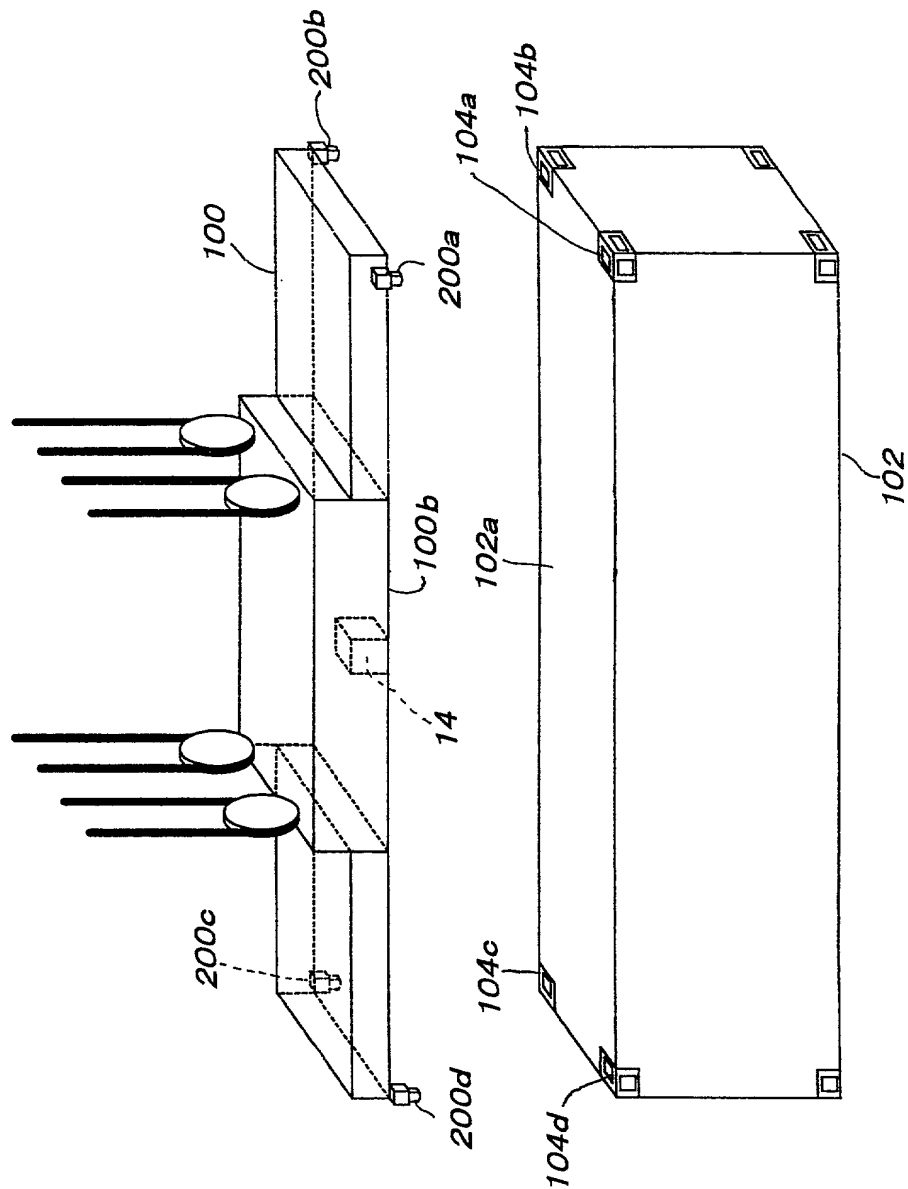


FIG. 12

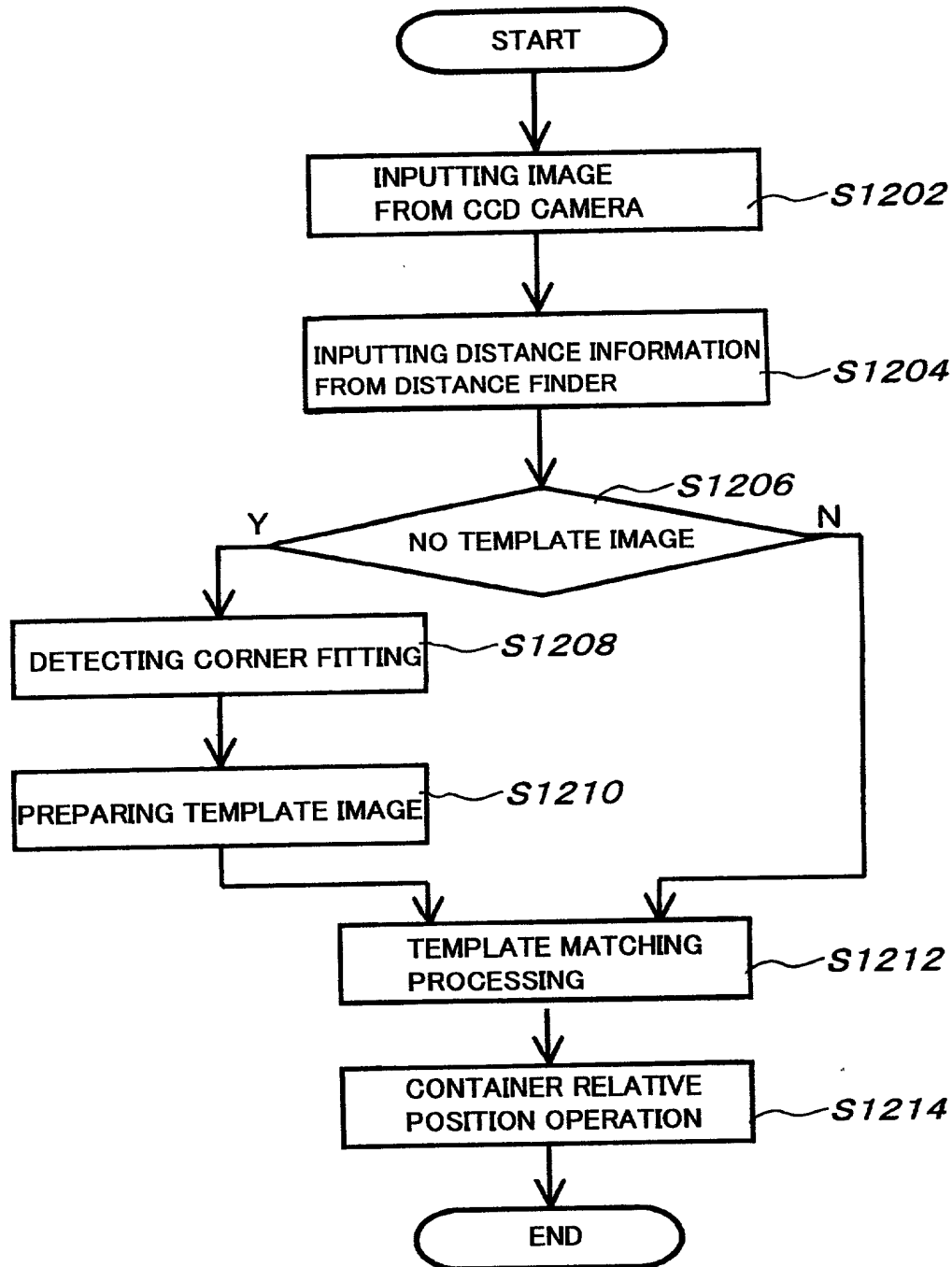


FIG. 13

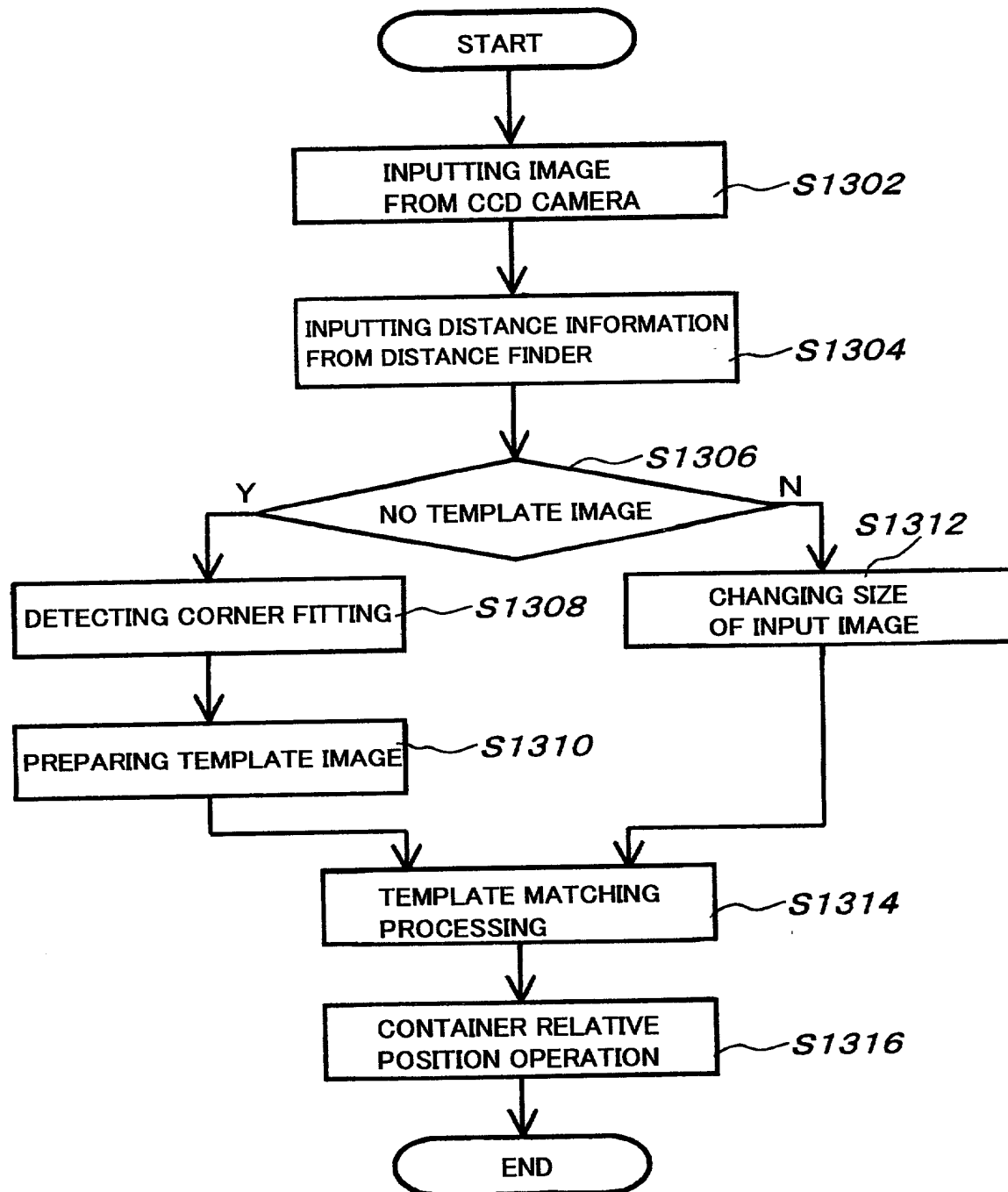


FIG. 14

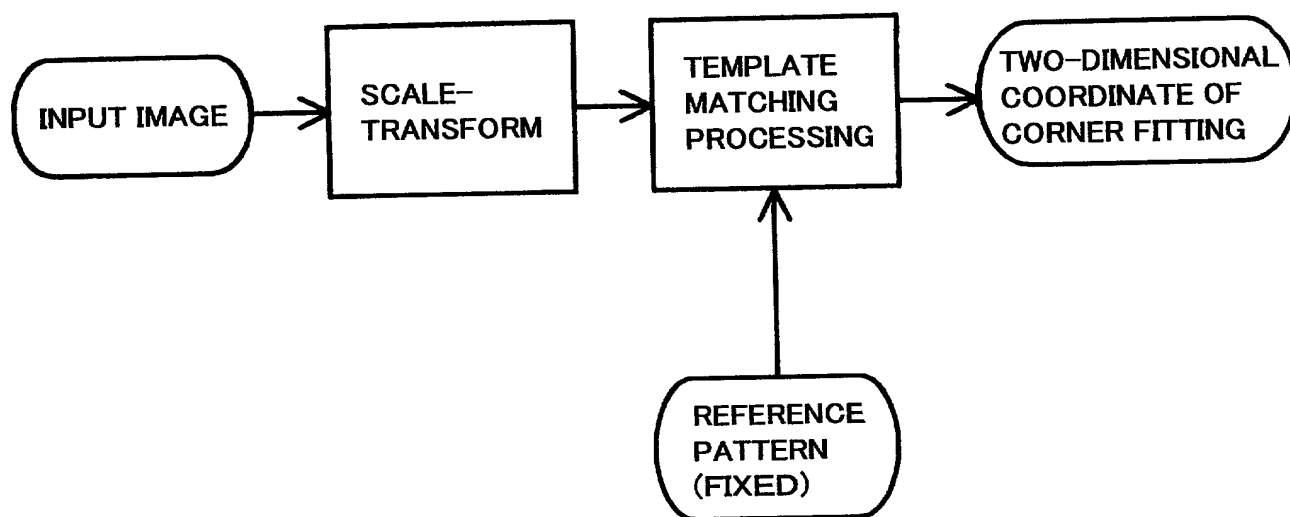


FIG. 15

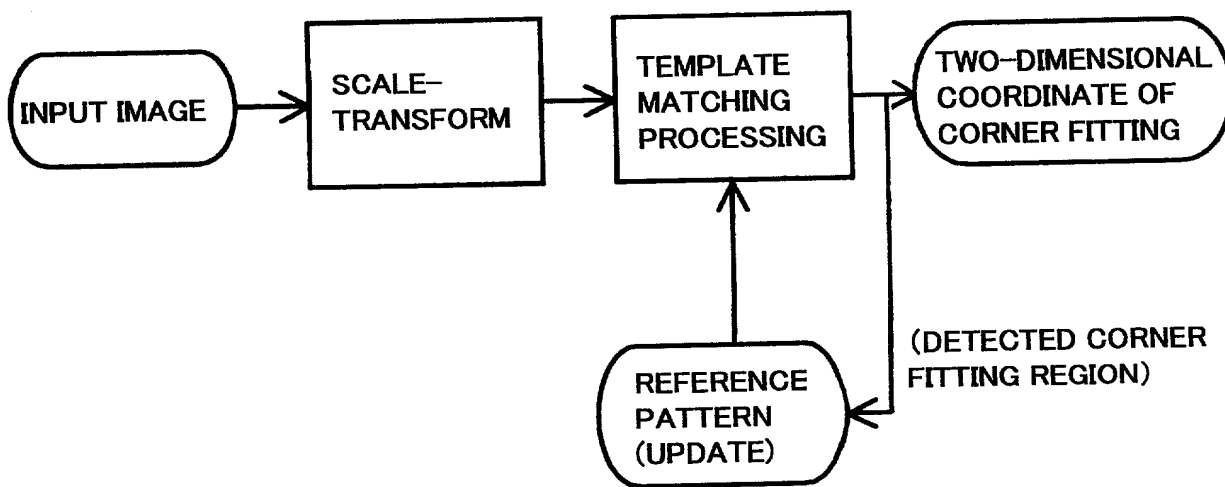


FIG. 16

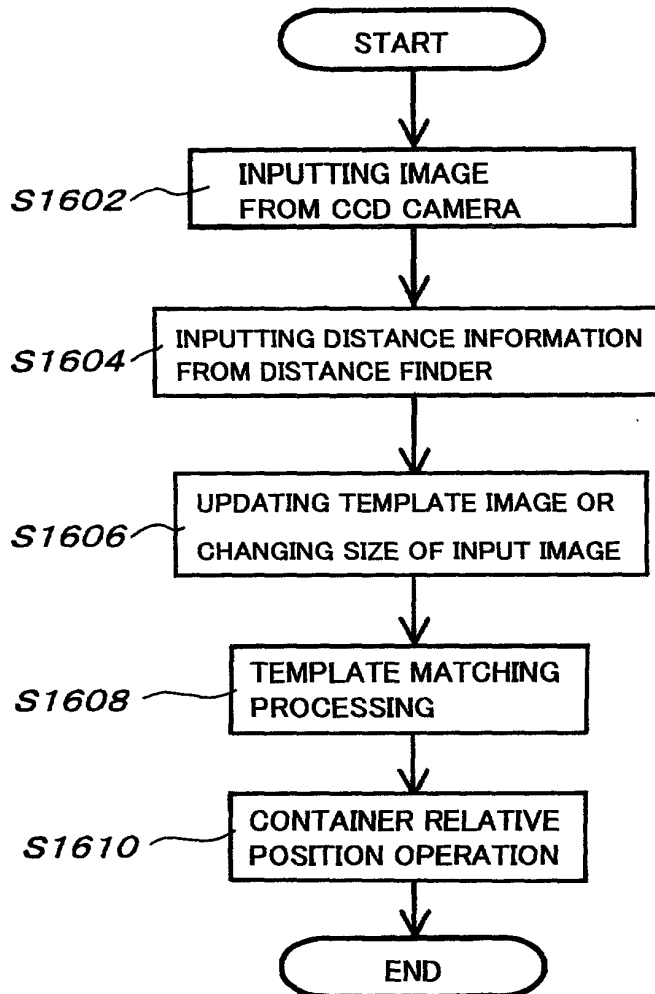
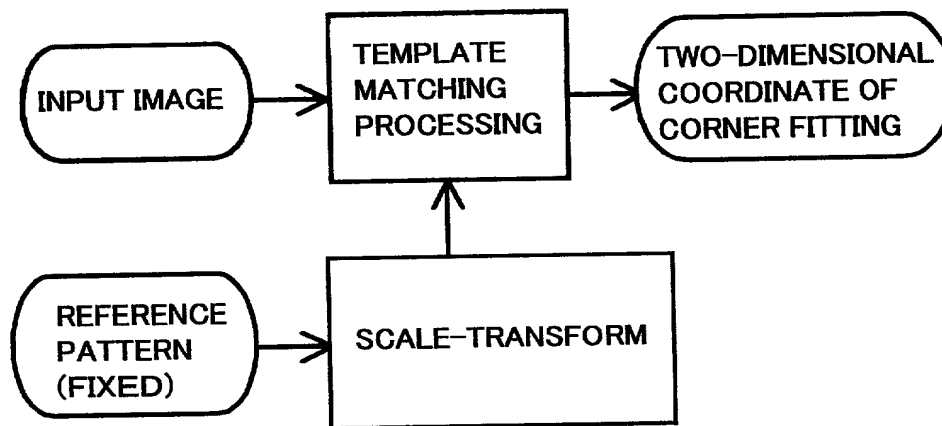
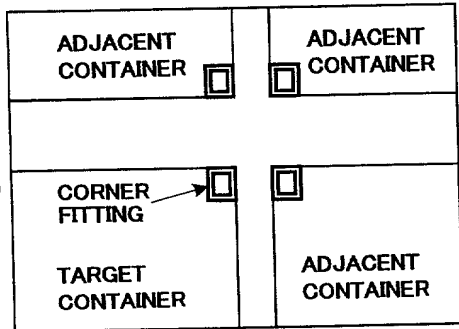


FIG. 17



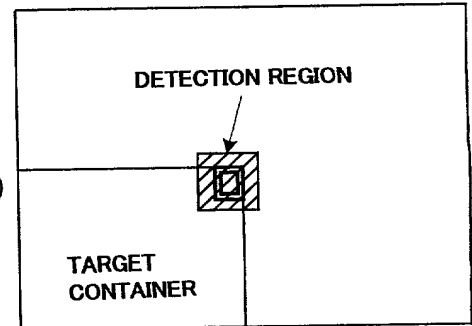
09011729:072504
0000000000000000

FIG. 18(a)



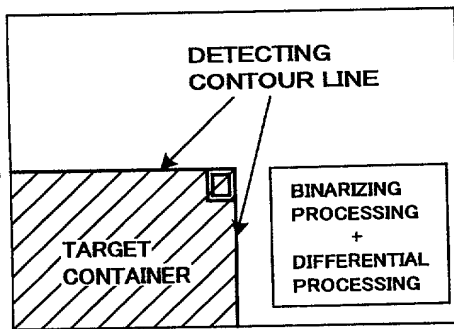
ORIGINAL IMAGE

FIG. 18(d)



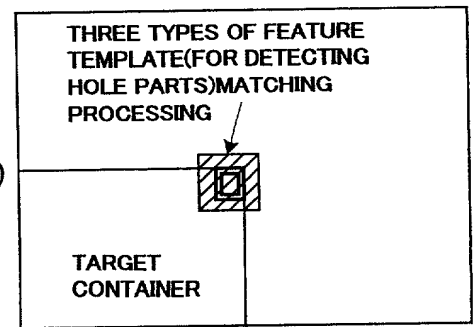
SETTING-UP OF
DETECTION REGION

FIG. 18(b)



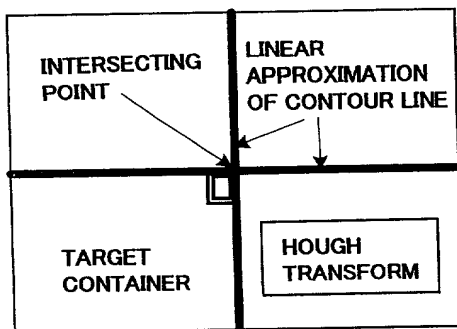
DETECTION RESULT ON
CONTAINER UPPER SURFACE

FIG. 18(e)



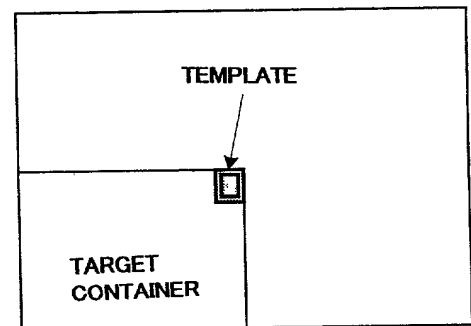
FEATURE TEMPLATE
(FOR DETECTING HOLE PARTS)
MATCHING PROCESSING

FIG. 18(c)



RESULTS OF LINEAR
APPROXIMATION OF
CONTOUR LINE AND
INTERSECTING
POINT DETECTION

FIG. 18(f)



RESULT OF TEMPLATE
PREPARATION

FIG. 19(a)

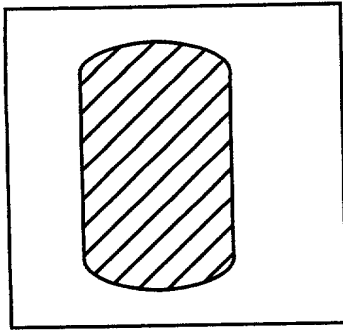
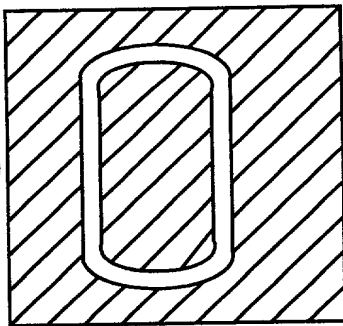
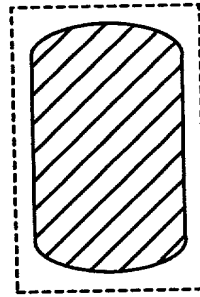


IMAGE DATA HAVING LOW
CONCENTRATION IN HOLE PART



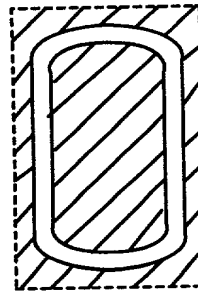
RESULT OF
DIFFERENTIAL PROCESSING

FIG. 19(c)



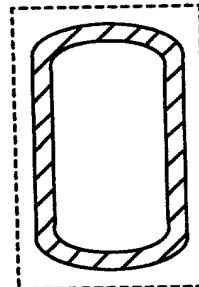
FEATURE TEMPLATE
(FOR DETECTING HOLE PARTS)
IMAGE 1

FIG. 19(d)



FEATURE TEMPLATE
(FOR DETECTING HOLE PARTS)
IMAGE 2

FIG. 19(e)



FEATURE TEMPLATE
(FOR DETECTING HOLE PARTS)
IMAGE 3

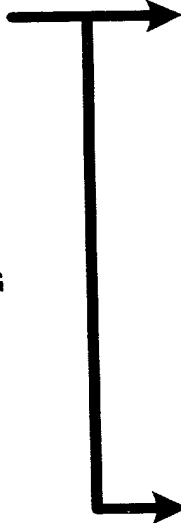
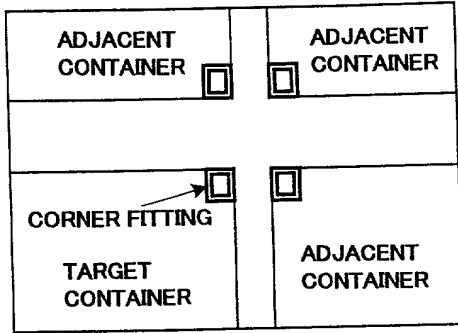
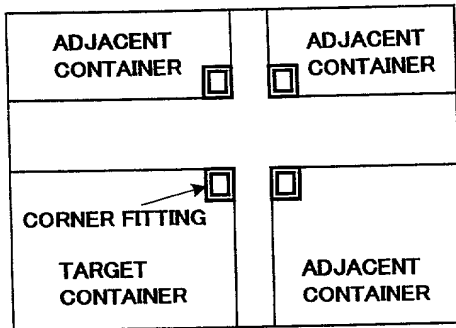


FIG. 20(a)



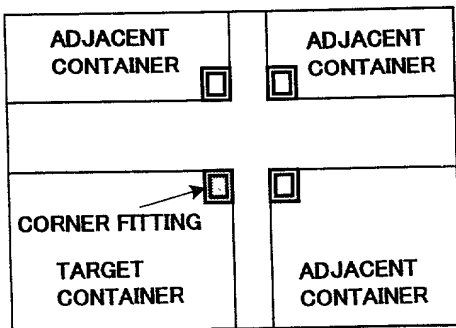
ORIGINAL IMAGE

FIG. 20(b)



FEATURE TEMPLATE
(FOR DETECTING HOLE PARTS)
MATCHING PROCESSING

FIG. 20(c)



RESULT OF TEMPLATE
PREPARATION

THREE TYPES OF FEATURE TEMPLATE
(FOR DETECTING HOLE PARTS)
MATCHING PROCESSING
(WHOLE IMAGE DATA)

FIG. 21(a)

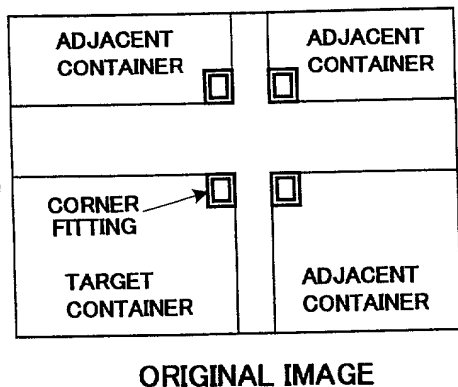


FIG. 21(d)

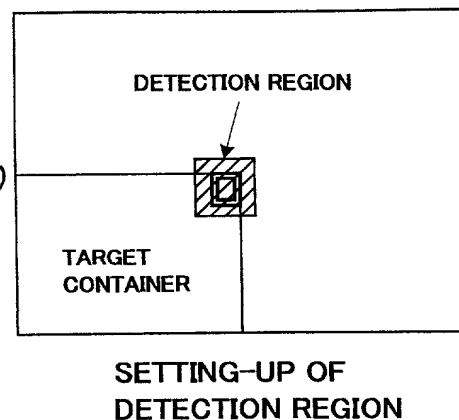


FIG. 21(b)

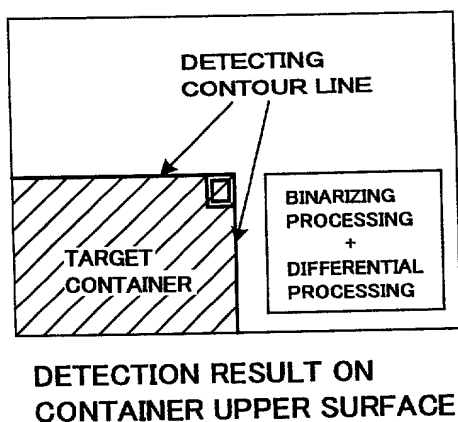


FIG. 21(e)

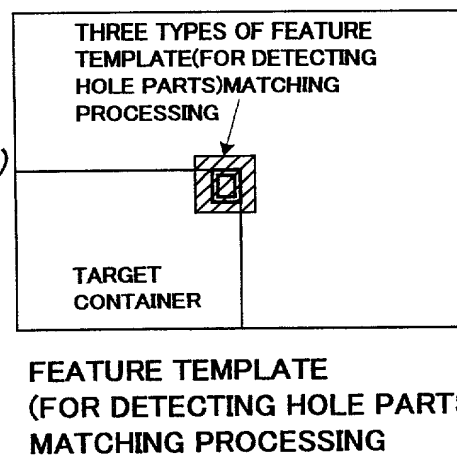


FIG. 21(c)

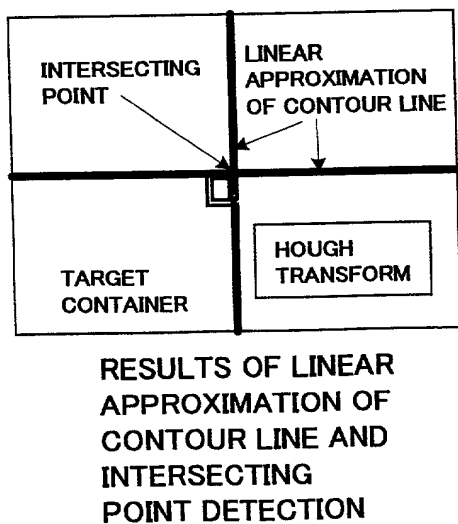
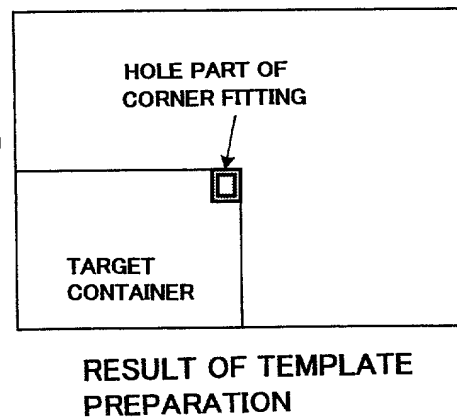
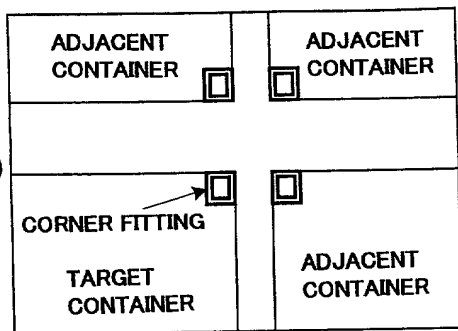


FIG. 21(f)



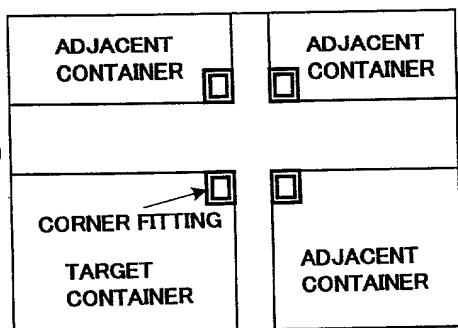
00011728072501

FIG. 22(a)



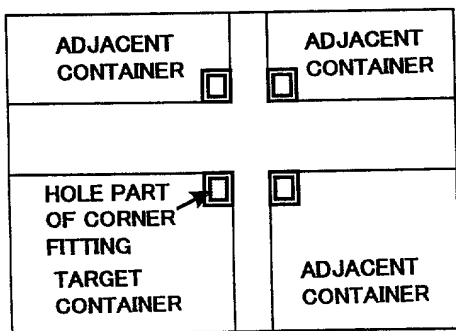
ORIGINAL IMAGE

FIG. 22(b)



FEATURE TEMPLATE
(FOR DETECTING HOLE PARTS)
MATCHING PROCESSING

FIG. 22(c)



RESULT OF TEMPLATE
PREPARATION

THREE TYPES OF FEATURE TEMPLATE
(FOR DETECTING HOLE PARTS)
MATCHING PROCESSING
(WHOLE IMAGE DATA)